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EXAMINER	
LEUNG, CHRISTINA Y	
ART UNIT	**PAPER NUMBER**
2633	

DATE MAILED: 12/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/054,637	SPANNER, GUENTER	
	Examiner	Art Unit	
	Christina Y. Leung	2633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 January 2002*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15* is/are rejected.

7)☒ Claim(s) *9* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *22 January 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Objections

2. Claim 9 is objected to because of the following informalities:

Claim 9 recites "alterned" (sic) in line 10 of the claim. Examiner respectfully suggests that Applicants amend the word to "altered."

Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1, 3, 5-7, 9, 11, and 13 are rejected under 35 U.S.C. 102(e) as being anticipated by Tanaka et al. (US 6,681,082 B1).

Regarding claim 1, Tanaka et al. disclose a network element (element 4 shown in Figures 1 and 4) for compensation of tilting in data transmission links of a wavelength division multiplex system (shown in Figure 1) for optical data transmission signals having at least one input for an optical N-channel input signal and at least one output for an altered N-channel output signal, the network element comprising:

at least one demultiplexer 41 for frequency-dependent splitting of the at least one input signal into a plurality of paths for individual sub-bands; and

at least one amplifier (amplifiers 42C and 42L) and at least one multiplexer 43 provided for each of the plurality of paths for combining the individual sub-bands (column 11, lines 39-52).

Tanaka et al. clearly disclose that the elements in their system provide compensation for tilting (also known as dispersion; column 4, lines 33-41; column 11, lines 39-67; column 12, lines 1-13).

Regarding claim 3, Tanaka et al. further disclose a dispersion-compensating element (such as dispersion compensating fiber 44C shown in the network element 4 in Figure 4) in at least one of the plurality of paths.

Regarding claim 5, Tanaka et al. further disclose a common amplifier 1C, acting over an entire spectrum of the data transmission signal, arranged upstream of the demultiplexer 41 (Figure 1; column 9, lines 40-42). Examiner notes that demultiplexer 41 is not explicitly shown in Figure 1, but it is located within element 4, as shown in detail in Figure 4.

Regarding claim 6, Tanaka et al. further disclose a common amplifier 2A, acting over an entire spectrum of the data transmission signal, arranged downstream of the multiplexer 43 (Figure 1; column 9, lines 52-55). Examiner notes that multiplexer 43 is not explicitly shown in Figure 1, but it is located within element 4, as shown in detail in Figure 4.

Regarding claim 7, Tanaka et al. disclose that a common dispersion-compensating element (dispersion compensating fiber 3c), acting over an entire spectrum of the data

transmission signal, may be arranged downstream of the multiplexer 43 (Figure 6; column 13, lines 64-67; column 14, lines 1-26).

Regarding claim 9, Tanaka et al. disclose a data transmission link (Figures 1 and 4), comprising:

a transmitter (including transmitters 1A);

a receiver (including receivers 2C);

a plurality of amplifier elements interposed between the transmitter and receiver (including amplifiers 1C and 2A); and

at least one network element 4 (shown in detail in Figure 4) interposed between the transmitter and the receiver, the network element for compensation of tilting in the data transmission link of a wavelength division multiplex system for optical data transmission signals having at least one input for an optical N-channel input signal and at least one output for an altered N-channel output signal, the network element including at least one demultiplexer 41 for frequency-dependent splitting of the at least one input signal into a plurality of paths for individual sub-bands, at further including at least one amplifier (amplifiers 42C and 42L) and at least one multiplexer 43 for each of the plurality of paths for combination of the individual sub-bands.

Regarding claim 11, Tanaka et al. disclose a method for compensation of tilting in data transmission links of a wavelength division multiplex system for an optical data transmission signal (Figures 1 and 4), the method comprising the steps of:

splitting a frequency band of the optical data transmission signal into a plurality of individual sub-bands (using demultiplexer 41); and

subjecting each sub-band, individually, to one of amplification and attenuation (amplification using amplifiers 42C and 42L) such that, after combination of the plurality of individual sub-bands, an originally existing tilting or ripple (also known as dispersion) is largely compensated (column 4, lines 33-41; column 11, lines 39-67; column 12, lines 1-13).

Regarding claim 13, Tanaka et al. further disclose the step of performing tilting influencing, with an EDFA, for each individual sub-band (column 12, lines 14-22).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 2, 4, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka et al. in view of Bastien et al. (US 6,307,668 B1).

Regarding claims 2, 4, and 12, Tanaka et al. disclose a network element and method for compensation of tilting as discussed above with regard to claims 1, 3, and 11 respectively, including amplifiers and a step of providing amplification. Regarding claim 4 in particular, Tanaka et al. further disclose that the amplifiers are EDFAs (column 12, lines 14-22). Tanaka et al. do not specifically disclose that each amplifier is individually controlled.

However, Bastien et al. teach a system (Figure 1), related to the one disclosed by Tanaka et al., including a demultiplexer 18 for frequency-dependent splitting an input signal into a plurality of paths for individual sub-bands, amplifiers for amplifying the sub-bands (not explicitly numbered in Figure 1, but shown and labeled as EDFAs), and a multiplexer 20.

Bastien et al. further teach individually controlling each amplifier in a closed-loop manner (Figure 2 shows the EDFAs 44,52, and 58 controlled using automatic gain control systems 64, 66, and 68).

It would have been obvious to a person of ordinary skill art to control the amplifiers disclosed by Tanaka et al. in the manner taught by Bastien et al. in order to control the gain of the amplifiers and thereby maintain constant gain for each channel even as input power and/or number of channels varies in each path (Bastien et al., column 3, lines 36-40).

7. Claims 8, 10, 14, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka et al. in view of Ishikawa et al. (US 5,602,666 A).

Regarding claims 10 and 14, Tanaka et al. disclose a network element and method for compensation and influencing of tilting as discussed above with regard to claims 9 and 13 respectively. Tanaka et al. do not specifically disclose a measuring device for determining the tilting or a step of performing control of the tilting influencing.

However, Ishikawa et al. teach a system related to the one disclosed by Tanaka et al. including a network element 22 for compensation for tilting (Figure 29; column 35, lines 57-67; column 36, lines 1-11). Ishikawa et al. further teach a measuring device 31 that controls the tilting influencing (Figure 43; column 42, lines 8-55).

It would have been obvious to a person of ordinary skill art to include a measuring device for determining the tilting and then provide a step of controlling the tilting (in a closed-loop manner) using the feedback from the measuring device as taught by Ishikawa et al. in the system and method disclosed by Tanaka et al. in order to provide accurate compensation of the tilting/dispersion in the system. One in the art would have been especially motivated to combine

the measuring device and control suggested by Ishikawa et al. in the system and method disclosed by Tanaka et al. so that the tilting/dispersion can be dynamically compensated as conditions in the transmission system change over time.

Regarding claims 8 and 15, Tanaka et al. disclose a network element and method for compensation of tilting as discussed above with regard to claims 1 and 11 respectively, including splitting a plurality of N channels into a plurality of paths. Although Tanaka et al. disclose "K" paths, they do not specifically disclose that the same number of m channels are provided in each path, where N=K*m.

However, again Ishikawa et al. teach a system related to the one disclosed by Tanaka et al. including a network element 22 for compensation for tilting (Figure 29). Ishikawa et al. further teach demultiplexer for frequency-dependent splitting of an input signal into paths having sub-bands and providing tilting compensation in each path (Figure 29 shows 4 channels divided into 4 paths; Figure 32 also shows 4 channels divided into 2 paths). It would have been obvious to a person of ordinary skill art to specifically divide the channels evenly into m channels per path as suggested by Ishikawa et al. in the system disclosed by Tanaka et al. in order to supply each path with a similar amount of traffic and thereby prevent any particular path from responding differently from the others due to having a significantly different amount of traffic. One in art also would have been particularly motivated to provide m=1 channel in each path (as taught by Ishikawa et al. in Figure 29) in the system disclosed by Tanaka et al. in order to provide tilting compensation that is specifically tailored for each individual wavelength in the system.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christina Y. Leung whose telephone number is 571-272-3023. The examiner can normally be reached on Monday to Friday, 6:30 to 3:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on 571-272-3022. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 571-272-2600.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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